

From: Sorensen, Chris
To: chris.sorensen
Subject: Fwd: Results of metals analysis in fish, beaver
Date: Tuesday, September 1, 2015 3:10:21 PM
Attachments: [W1502158.pdf](#)

Results from testing on two deceased beavers near the Animas River attached.

--Chris

Chris Sorensen | Operations Section Chief



720.413.6184 Mobile | 720-852-6750 Fax
9195 E Mineral Avenue, Suite 200, Centennial, CO 80112-3556
chris.sorensen@state.co.us | www.dhsem.state.co.us
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----- Forwarded message -----

From: May - DNR, Melynda <melynda.may@state.co.us>
Date: Tue, Sep 1, 2015 at 2:22 PM
Subject: Re: Results of metals analysis in fish, beaver
To: "Sorensen, Chris" <chris.sorensen@state.co.us>

Chris,
I'm not sure if you got this yet.

I've attached the results of the testing for the two beavers that were found dead in the Animas. The cause of death for both animals is unknown.

The beavers tested negative for tularemia.
Cadmium and lead and were "elevated or high", but were not a likely cause of death.

Mindi May
Water Quality Coordinator



P [303.291.7124](tel:303.291.7124) | F [303.291.7456](tel:303.291.7456) | C [303.809.4684](tel:303.809.4684)
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Laboratory Report
Addendum
Version 1

*This report supersedes all
previous reports for this case*

Case #: W1502158
Referral #:
Date Collected: 08/17/2015
Date Received: 08/17/2015
Case Coordinator: Dr. Don Kitchen
Owner:
Colorado Dept of Wildlife-Drayton Harrison
151 E. 16 th St.
DURANGO, CO 81301
Electronically Signed and Authorized
By:
Dr. Don Kitchen
sent by Alexandria Fenton
on 8/28/2015 5:49:42PM

Email To: margie.michaels@STATE.CO.US
Colorado Parks & Wildlife NE Region
317 West Prospect
Fort Collins, CO 80526

Case Contacts

Report To	Fox, Karen	970-472-4318	karen.fox@colostate.edu
Report To	Pabilonia, Kristy	970-297-4109	kristy.pabilonia@colostate.edu
Submitter	Colorado Parks & Wildlife NE Region	970-472-4478	margie.michaels@STATE.CO.US

Specimen Details

ID	Taxonomy	Sex	Age
Beaver 1	Beaver		
Beaver 2	Beaver		

Owner: Colorado Dept of Wildlife-Drayton Harrison

Specimens Received: Body; Liver Tissue;

Laboratory Findings/Diagnosis

CLINICAL HISTORY AND NECROPSY FINDINGS:

Two male beavers were submitted by the Colorado Division of Wildlife with a history of being found dead in the Animus River near the site of contamination from old mine tailings. There was concern that the river was contaminated with heavy metals and that the cause of death in these beavers may have been due to heavy metal toxicity.

Two adult male beavers were submitted for necropsy. There is always concern of tularemia in the beaver population and an abbreviated necropsy was performed primarily to collect liver tissue for histopathologic evaluation, identification of possible infection with tularemia and evaluation of the liver for heavy metal content. Liver and spleen were collected and submitted for real-time PCR to determine the presence of Francisella tularensis genetic material. Liver samples were also submitted for microscopic examination even though they were extremely autolytic. No gross lesions were discerned that were consistent with tularemia. However, these animals were severely autolytic and lesions may not have been discernible.

GROSS NECROPSY DIAGNOSIS: NONE, NO LESIONS SUGGESTING TULAREMIA

LABORATORY RESULTS:

Real-time PCR failed to identify Francisella tularensis genetic material. This test was considered to be negative.

Mineral analysis:

The liver was submitted to Michigan State University DCPAH for mineral analysis. Interpretation by the toxicologist stated the following: Beaver "A", toxic elements (arsenic, mercury, selenium and Thallium) were negative or low with the

Owner: Colorado Dept of Wildlife-Drayton Harrison

exception of cadmium and lead, which were both elevated or high, but most likely not in the toxic range. The following elements appear to be in their normal ranges for this species: zinc, copper, iron and selenium.

Beaver "B"-toxic elements (arsenic, Mercury, selenium and Thallium) were negative or low with the exception of cadmium and lead, which were both elevated or high. Both elements are at a value that border on potential toxic ranges. The following elements appeared to be in their normal ranges for the species: manganese, zinc, copper, iron and selenium. This report is attached.

HISTOPATHOLOGY REPORT:

Slides 1, 2 and 3. Liver and spleen (1 each). Both tissues were examined histologically and found to be extremely autolytic. There was; however, no histologic evidence of inflammatory disease. Evaluation of tissue this autolytic is of little significance in most cases.

HISTOPATHOLOGIC DIAGNOSIS: TOO AUTOLYTIC FOR MEANINGFUL HISTOLOGIC INTERPRETATION.

REMARKS:

Neither of these animals had any evidence of tularemia (gross examination, histopathologic evaluation and PCR results). The mineral analysis, as outlined above, did not suggest that these animals died of exposure to toxic minerals from the contaminated river. It may be helpful to compare these findings to water analysis results from the suspected river. The cause of death in these animals was not due to tularemia and not likely due to exposure to any of the above listed minerals.

Sincerely,
Don Kitchen, DVM, PhD, DACVP, Director
Colorado State University WS Diagnostic Laboratory
425 29 Road, Grand Junction, CO 81504

Case Summary

Neither of these animals had any evidence of tularemia (gross examination, histopathologic evaluation and PCR results). The mineral analysis has outlined above did not suggest that these animals died of exposure to toxic minerals from the contaminated river. It may be helpful to compare these findings to water analysis results from the suspected river. The cause of death in these animals was not due to tularemia and not likely due to exposure to any of the above listed minerals.

BSL3

Francisella tularensis (Tularemia) real-time PCR

Animal/Source	Specimen	Specimen Type	Result Date	Results
Beaver 1	Beaver 1	Tissue Pool	19-Aug-2015	Negative Liver & spleen were pooled for testing.
Beaver 2	Beaver 2	Liver Tissue	19-Aug-2015	Negative

Necropsy

Necropsy Wildlife / Exotics Gross Examination Only

Animal/Source	Specimen	Specimen Type	Result Date	Results
Beaver 1	Beaver	Body	27-Aug-2015	Complete

Tissue Collection

Animal/Source	Specimen	Specimen Type	Result Date	Results
Beaver 1	Beaver	Body	27-Aug-2015	Complete

Owner: Colorado Dept of Wildlife-Drayton Harrison

Referral Tests**Referral Lab Send Out Test**

Animal/Source	Specimen	Specimen Type	Result Date	Results
Beaver 1	Beaver 1	Liver Tissue	27-Aug-2015	Complete - See attached
Beaver 1	Beaver 2	Liver Tissue	27-Aug-2015	Complete - See attached

Owner: Colorado Dept of Wildlife-Drayton Harrison

Appendix - Report Related Images

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**MICHIGAN STATE
UNIVERSITY**


Director: Dr. Rachel Y. Reams
4125 Beaumont Road
Lansing, MI 48910-8104
Phone: 517-353-1883
Fax: 517-353-5096
www.animalhealth.msu.edu

REPORT OF LABORATORY EXAMINATION

Client: Colorado State University (29874)
Western Slope Ahd/
425 29 Road
Grand Junction, CO 81501

Owner: CO Division of Wildlife, Drayton Harrison

Report #: C15233025

Admit: Kitchen, Dr.

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Received: 08/21/15 11:58

Hard:

Sex: Unknown

Printed: 08/26/15 16:22

Species: Other Mammal

Age:

Animal ID	DWR	Reference Range ()	Specimen Tissue	Reference Range ()	Mercury, Tiss (ug/g dry)	Reference Range (ug/g dry)
W1502158A	0.237	0.260-0.340	Liver		<0.53	
W1502158B	0.253	0.260-0.340	Liver		<0.50	

Animal ID	Copper, Tiss (ug/g dry)	Reference Range (ug/g dry)	Thallium, Tiss (ug/g dry)	Reference Range (ug/g dry)	Lead, Tiss (ug/g dry)	Reference Range (ug/g dry)
W1502158A	12.52		<0.11		2.44	<=3.00
W1502158B	15.76		<0.10		4.85	<=3.00

Animal ID	Iron, Tiss (ug/g dry)	Reference Range (ug/g dry)	Cobalt, Tiss (ug/g dry)	Reference Range (ug/g dry)	Arsenic, Tiss (ug/g dry)	Reference Range (ug/g dry)
W1502158A	548.00		0.13		<0.11	<=8.00
W1502158B	841.89		0.13		<0.10	<=8.00

Animal ID	Cadmium, Tiss (ug/g dry)	Reference Range (ug/g dry)	Selenium, Tiss (ug/g dry)	Reference Range (ug/g dry)	Zinc, Tiss (ug/g dry)	Reference Range (ug/g dry)
W1502158A	61.74		1.48		182.72	
W1502158B	185.13		1.64		166.03	

Animal ID	Molybdenum, Tiss (ug/g dry)	Reference Range (ug/g dry)	Manganese, Tiss (ug/g dry)	Reference Range (ug/g dry)
W1502158A	2.17		41.09	
W1502158B	1.41		15.62	

▲ = Corrected Result

Owner: Colorado Dept of Wildlife-Drayton Harrison

Appendix - Report Related Images

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Client: Colorado State
University (29874)
Report #: C15233025**Owner:** CO Division of Wildlife, Drayton
Harrison
Herd:

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Admit: Kitchen, Dr.

Animal ID	Comment, Tissue Mineral	Reference Range 0
W1502158A	<p>Toxic elements (As, Hg, Se, Ti) were negative or low, with the exceptions of Cd and Pb which were both elevated or high, but most likely not in a toxic range. The following elements appear to be in their normal ranges for this species: Zn, Cu, Fe, Se.</p> <p>Please be advised that the DCPAH Toxicology Section disposes of all samples 12 months from the date of receipt.</p> <p>Andreas Lehner, Ph.D. Analytical Chemist 8/26/2015 4:15 PM</p>	
W1502158B	<p>Toxic elements (As, Hg, Se, Ti) were negative or low, with the exceptions of Cd and Pb which were both elevated or high. Both elements are at values that border on potential toxic ranges. The following elements appear to be in their normal ranges for this species: Mn, Zn, Cu, Fe, Se.</p> <p>Please be advised that the DCPAH Toxicology Section disposes of all samples 12 months from the date of receipt.</p> <p>Andreas Lehner, Ph.D. Analytical Chemist 8/26/2015 4:20 PM</p>	

▲ = Corrected Result

End of Report